a pass-through drug port implanted within the human patient, the drug port being designed to be used with an externally located drug delivery device for injecting medication into the bloodstream of the human patient at a time after the alarm indicates that a heart attack is occurring.

2. (Original) The cardiosaver device of claim 1 wherein the implantable sensor is two or more electrodes.

3. (Original) The cardiosaver device of claim 2 wherein one of the electrodes is a first electrode and the cardiosaver device include an electronics module that has a metal case that acts as a second electrode.

4. (Original) The cardiosaver device of claim 1 wherein the sensor has an output electrical signal which is the electrogram of the human patient and there is electronics circuitry contained within the electronics module, the electronics circuitry being designed to detect the occurrence of a heart attack from a change of the sensor's output electrical signal when compared to the sensor's output signal when no heart attack is occurring.

5. (Original) The cardiosaver device of claim 4 wherein the electronics circuitry within the electronics module includes a detector for detecting a variation of the ST segment of the electrogram as an indication of the heart attack.

6. (Original) The cardiosaver device of claim 4 wherein the electronics circuitry within the electronics module includes the capability for recording an electrogram signal from the sensor, the recorded electrogram being retained in memory for playback at a later time.

7. (Original) The cardiosaver device of claim 1 wherein the alarm of the cardiosaver system includes a subcutaneous electrical tickle which is an electrical stimulation.

8. (Original) The cardiosaver device of claim 1 wherein the alarm includes an implanted audio device having an alarm output that can be sensed by the human patient.

9. (Original) The cardiosaver device of claim 1 further including an external alarm system that is situated externally from the human patient for indicating to the human patient that he is experiencing a heart attack.

10. (Original) The cardiosaver device of claim 1 further including a self-sealing septum, drug chamber and exit port each being a part of the drug port, and the drug delivery device being a hypodermic syringe that includes a needle having a sharp point at its distal end, the sharp point being designed to be placed through the self-sealing septum of the drug port.

11. (Original) The cardiosaver device of claim 10 further including a medication delivery catheter that is joined to the exit port, the medication delivery catheter having a distal portion that is placed into the patient's bloodstream.

12. (Original) The cardiosaver device of claim 11 further including a check valve located at the distal portion of the medication delivery catheter.

13. (Original) The cardiosaver device of claim 10 further including an electronics module that is part of the cardiosaver device and the pass-through drug port is structurally integrated into the electronics module.

14. (Original) The cardiosaver device of claim 13 wherein the externally located drug delivery device includes a drug delivery needle that is designed to pass

through the self-sealing septum of the drug port, the cardiosaver device also having the capability to create an audio signal when the distal end of the needle is properly positioned for delivery of medication into and through the drug port and into the human patient's bloodstream.

15. (Original) The cardiosaver device of claim 14 wherein the audio signal indicating that the needle is properly positioned is a unique audio signal that is different from the audio alarm signal that indicates that a heart attack is occurring.

16. (Original) The cardiosaver device of claim 1 further including an electronics module that is part of the cardiosaver device and the drug port is structurally separated from the electronics module.

17. (Original) The cardiosaver device of claim 1 wherein the alarm signal indicating that a heart attack is occurring has a first alarm pattern, the first alarm pattern being a different pattern as compared to a second pattern of alarm signal that indicates that there is insufficient blood flow in at least one coronary artery of the human patient as a result of increased work load of the heart due to exercise.

18. (Original) The cardiosaver device of claim 1 further including the electronic circuitry of a heart pacemaker for electrically pacing the heart of the human patient.

19. (Original) The cardiosaver device of claim 1 further including electronic circuitry for an implantable cardiac defibrillator designed to electrically shock the heart of the human patient if ventricular fibrillation is detected.

20. (Original) The cardiosaver device of claim 1 further including an implanted electronics module designed to be implanted within the human patient, the

electronics module having a wireless transmitter that can communicate by a wireless signal with an externally located receiving system thus providing a wireless communication system.

21. (Original) In combination, an implanted medical device and external equipment, the combination being a cardiosaver system designed for the rapid treatment of a heart attack of a human patient, the system including:

an implanted medical device that includes an implanted electronics module and at least one sensor that is electrically coupled to the sensor, the medical device being designed for detecting the occurrence of the heart attack of the human patient;

an alarm that produces an alarm signal for indicating to the human patient that a heart attack is occurring when the sensor to which the alarm is electrically coupled detects the occurrence of a heart attack;

a pass-through drug port implanted within the human patient, the drug port being designed to cooperate with an externally located drug delivery device for injecting medication into the bloodstream of the human patient at a time after the alarm indicates to the human patient that a heart attack is occurring; and

external equipment having the capability to send wireless signals to and receive wireless signals from the implanted electronics module.

22. (Original) The cardiosaver system of claim 21 wherein the external equipment includes an external alarm system that is designed to indicate to the human patient that a heart attack is occurring.

23. (Original) The cardiosaver system of claim 22 wherein the external alarm system is a fixed location alarm system located at the place where the human patient normally resides.

24. (Original) The cardiosaver system of claim 22 wherein the external alarm system is a portable alarm system that is designed to be carried by the human patient.

25. (Original) The cardiosaver system of claim 21 wherein the external equipment includes an external alarm system that is designed to inform the human patient that a heart attack has been detected, the external equipment also including a rapid treatment system that is coupled to the external alarm system, the rapid treatment system being designed to provide medical assistance from a medical practitioner for the human patient when the external alarm system indicates that a heart attack has occurred, the medical practitioner being located at a site that is remote from the human patient.

26. (Original) The cardiosaver system of claim 25 wherein the external equipment is designed to provide medical advice to the human patient, the medical advice originating from at least one of the two systems that include the external alarm system and the rapid treatment system.

27. (Original) The cardiosaver system of claim 26 wherein the medical advice includes a description of at least one medication that is to be taken by the human patient.

28. (Original) The cardiosaver system of claim 26 wherein the medical advice includes instructions to proceed immediately to an emergency medical facility.

29. (Original) The cardiosaver system of claim 26 wherein the medical advice includes the statement that an ambulance from emergency medical services is on its way to bring the patient to an emergency medical facility.

30. (Original) The cardiosaver system of claim 26 wherein the medical advice is a collection of verbal directions to get a pre-prescribed medication that is located within the place where the human patient resides and to use a hypodermic syringe to deliver that medication through the drug port of the implanted cardiosaver device and into the bloodstream of the human patient.

31. (Original) The cardiosaver system of claim 21 wherein the external equipment includes an external alarm system that is designed to call a medical practitioner at a diagnostic center by means of a telephone link.

32. (Original) The cardiosaver system of claim 21 wherein the electronics module is designed to store electrogram data in stored electrogram circuitry and to send these data to the external equipment by means of the wireless signal from the implanted electronics module.

33. (Original) The cardiosaver system of claim 32 wherein the external equipment is designed to send to a diagnostic center a collection of data that includes, but is not limited to, at least one of the following, the patient's real time electrogram, the patient's stored electrogram, the patient's heart rate and the patient's identification number, any of these data being sent to the external equipment by means of the wireless signal from the implanted electronics module.

34. (Original) The cardiosaver system of claim 21 wherein the external equipment includes a portable alarm system that is designed to be carried by the human patient, the portable alarm system being designed to receive the

wireless signal from the implanted electronics module and to inform the human patient of the occurrence of a heart attack by means of an audio signal.

35. (Original) The cardiosaver system of claim 21 wherein the external equipment includes a fixed location alarm system that is designed to be situated at the place where the human patient normally resides, the fixed location alarm system being designed to receive the wireless signal from the implanted electronics module and to inform the human patient of the occurrence of a heart attack by means of an audio signal.

36. (Original) The cardiosaver system of claim 21 wherein the external equipment includes a physician's programmer located externally from the human patient, the physician's programmer being designed to send wireless signals to and receive wireless signals from the implanted electronics module.

37. (Original) The cardiosaver system of claim 36 wherein the implanted medical device includes the capability for sensing, recording and transmitting by the wireless signal to the physician's programmer, the data being selected from at least one of the group that includes: the real time electrogram, the stored electrogram, the heart rate and the patient's unique identification number, the physician's programmer being designed to store and display the data that is transmitted.

38. (Original) The cardiosaver system of claim 37 wherein the physician's programmer is designed to visually display the data received from the implanted electronics module.

39. (Original) The cardiosaver system of claim 36 wherein the physician's programmer is in the form of a laptop computer that is designed to send a wireless signal for programming the implanted medical device, the wireless

signal being received by the implanted electronics module of the implanted medical device.

40. (Original) The cardiosaver system of claim 36 wherein the implanted electronics module is designed to receive command programming instructions from the externally located physician's programmer.

41. (Original) The cardiosaver system of claim 36 wherein the implanted electronics module includes an audio alarm that produces a sound to inform the human patient when a heart attack is detected, the physician's programmer being designed to program the implanted electronics module to adjust the intensity of the sound from the audio alarm.

42. (Original) The cardiosaver system of claim 36 wherein the implanted electronics module includes a subcutaneous electrical tickle device that produces an electrical stimulation signal to inform the human patient when a heart attack is detected, the physician's programmer being designed to adjust the intensity of the electrical stimulation signal.

43. (Original) The cardiosaver system of claim 36 wherein the implanted electronics module can be programmed by the physician's programmer to a specific threshold voltage for the ST segment of the electrogram so that, for any voltage detected having a greater magnitude as compared to that specific threshold voltage, the electronics module would indicate that a heart attack has been detected.

44. (Original) The cardiosaver system of claim 21 further including implanted heart pacemaker electronic circuitry for electrically pacing the heart of the human patient.

45. (Original) The cardiosaver system of claim 44 wherein the implanted electronics module includes the heart pacemaker electronic circuitry within a single case.

46. (Original) The cardiosaver system of claim 44 wherein the heart pacemaker electronic circuitry is contained within a first case and electronic circuitry for the detection of a heart attack is contained within a second case that is separate from the first case.

47. (Original) The cardiosaver system of claim 21 further including implanted defibrillator electronic circuitry designed to electrically shock the heart of the human patient if ventricular fibrillation is detected.

48. (Original) The cardiosaver system of claim 47 wherein the implanted defibrillator electronics circuitry and circuitry for the detection of a heart attack are both contained within a single case.

49. (Original) The cardiosaver system of claim 47 wherein the defibrillator electronic circuitry is contained within a first case and electronic circuitry for the detection of a heart attack is contained within a second case that is separate from the first case.

50. (Original) The cardiosaver system of claim 21 wherein the implanted electronics module includes an audio alarm.

51. (Original) The cardiosaver system of claim 21 wherein the implanted electronics module includes a vibration device, the vibration device being designed to indicate to the human patient that a heart attack is occurring by means of the human patient sensing the vibration.

52. (Original) The cardiosaver system of claim 21 wherein the external equipment includes a medication for injection through the drug port into the bloodstream of the human patient.

53. (Original) The cardiosaver system of claim 52 wherein the medication for injection through the drug port is selected from the group that includes a thrombolytic medication, an anti-thrombogenic medication or a combination of thrombolytic and anti-thrombogenic medications.

54. (Original) The cardiosaver system of claim 53 wherein the thrombolytic medication and anti-thrombogenic medication are selected from at least one of the group that includes tPA, urokinase, streptokinase, ReoPro, heparin, Plavix and any pharmaceutical analog of any one of these medications.

55. (Original) The cardiosaver system of claim 52 further including a means for applying vibration into the region of the heart of the human patient at a time after a medication has been injected into the bloodstream of the human patient, the vibration being applied for the purpose of enhancing the rapid break up of any blood clot formed in a coronary artery of the human patient.

56. (Original) The cardiosaver system of claim 55 wherein the vibration is applied by means of a device that generates an ultrasonic vibration.

57. (Original) The cardiosaver system of claim 21 wherein the externally located drug delivery device is a hypodermic syringe.

58. (Original) The cardiosaver system of claim 57 wherein the hypodermic syringe has a needle that has an opening for delivering medication into the drug port and the implanted cardiosaver is designed to produce an audio signal when the opening is properly positioned for delivering the medication into the drug port.

59. (Original) The cardiosaver system of claim 58 wherein the audio signal when the needle opening is properly positioned within the drug port is distinctly different from the audio alarm signal that indicates that a heart attack is occurring.

60. (Amended) An implanted cardiosaver device designed to detect both serious and non-emergency ~~a~~ cardiac ~~event~~ events of a human patient, the device including:

an electronic module that includes electronic circuitry for detecting the occurrence of at least two different types of cardiac events, at least one of those two events being a ~~heart attack~~ serious event so that immediate emergency action is required and the other cardiac event being a non-emergency event that is not serious so that no emergency action is required; and,

an alarm for informing the human patient that either a serious or a non-emergency ~~a~~ cardiac event is occurring, the alarm having two different alarm signals, a first type of alarm signal for a serious event and a second and different type of alarm signal for a non-emergency event that is not serious.

61. (Amended) The cardiosaver device of claim 60 wherein the second type of alarm signal is triggered by ~~one of the two types of cardiac events is~~ ischemia of a coronary artery that is a result of increased effort by the patient, which cardiac event is a non-emergency event that is not serious.

62. (Amended) The cardiosaver device of claim 60 wherein one of the ~~two types of~~ cardiac events that can trigger either a first type of alarm signal or a second type of alarm signal is a heart arrhythmia, the selection of the first type or

second type of alarm signal being dependent upon whether or not the arrhythmia is life threatening.

63. (Original) The cardiosaver device of claim 62 wherein the cardiosaver can detect at least one type of arrhythmia that is selected from the group that includes bradycardia, tachycardia, atrial fibrillation, atrial flutter, ventricular fibrillation, premature ventricular contractions (PVCs) and premature atrial contractions (PACs).

64. (Amended) The cardiosaver device of claim 60 wherein the first type of alarm signal is generated by the cardiosaver device when a heart attack occurs ~~alarm means is designed to produce different alarms for different types of cardiac events detected by the implanted cardiosaver~~.

65. (Original) The cardiosaver device of claim 60 further comprising a pass-through drug port implanted within the human patient, the drug port including a self-sealing septum through which a bolus of medication to treat the cardiac event can be rapidly injected into the bloodstream of the human patient using an externally located drug delivery device that is situated outside the body of the human patient.

66. (Original) The cardiosaver device of claim 65 wherein the externally located drug delivery device is a hypodermic syringe having a sharp end point for penetrating the septum of the drug port, the cardiosaver having the capability to produce a unique audio signal when the end point is pushed against a bottom plate of the drug port.

67. (Amended) The cardiosaver device of claim 60 ~~further comprising an~~ wherein the electronics module that is part of the cardiosaver device~~, the electronics module including electronic circuitry~~ includes a digital memory for storing electrograms of the human patient.

68. (Amended) In combination an implanted medical device and external equipment, the combination being a cardiosaver system, the cardiosaver system being designed to provide rapid treatment of a cardiac event of a human patient, the cardiosaver system including:

~~the~~ an implanted cardiosaver device which includes a sensor and electronics module for detecting the occurrence of a cardiac event~~,~~ and an alarm for informing the human patient that a cardiac event is occurring, the implanted cardiosaver device being designed to include wireless communication means capable of transmitting an input alarm signal from the implanted cardiosaver device to an alarm transceiver that is located outside of the body of the human patient;

an external alarm system including the alarm transceiver and an audio alarm speaker, the alarm transceiver being designed to receive the input alarm signal from the implanted cardiosaver device and transmit an output alarm signal and a data signal to a remote location indicating that a cardiac event has occurred; and

a network operation support system for receiving the output alarm signal and the data signal from the alarm transceiver of the external alarm system and, upon receipt of the output alarm signal, indicate to a medical practitioner that an alarm has occurred indicating that the human patient has had a cardiac event.

69. (Original) The cardiosaver system of claim 68 wherein the cardiac event is a heart attack.

70. (Original) The cardiosaver system of claim 68 wherein the cardiac event is a heart arrhythmia.

71. (Amended) The cardiosaver system of claim 70 wherein the cardiosaver device can detect at least one type of arrhythmia selected from the group that includes bradycardia, tachycardia, atrial fibrillation, atrial flutter, ventricular fibrillation, premature ventricular contractions (PVCs) and premature atrial contractions (PACs).

72. (Original) The cardiosaver system of claim 68 wherein the cardiac event is ischemia of the myocardium resulting from the human patient undergoing increased physical activity.

73. (Original) The cardiosaver system of claim 68 wherein the input alarm signal is designed to produce different alarm indications for different types of cardiac events detected by the implanted cardiosaver.

74. (Original) The cardiosaver system of claim 68 further including a pass-through drug port implanted within the human patient, the drug port including a self-sealing septum through which medication to treat the cardiac event can be rapidly injected into the bloodstream of the human patient using an externally located drug delivery device that is situated outside the body of the human patient.

75. (Amended) The cardiosaver system of claim 68 further including electrogram storage circuitry within the electronics module of the implanted cardiosaver device, the electrogram storage circuitry being designed to store an electrogram provided by the sensor, the implanted cardiosaver device being designed to transmit the stored electrogram to the external alarm system and the external alarm system being designed to transmit the stored electrogram to

the network operation support system for analysis by a medical practitioner situated at a diagnostic center.

76. (Original) The cardiosaver system of claim 75 wherein the stored electrogram includes a time period prior to the detection of the cardiac event.

77. (Original) The cardiosaver system of claim 75 wherein the stored electrogram includes a time period after detection of the cardiac event.

78. (Original) The cardiosaver system of claim 68 wherein the network operation support system includes a patient record database.

79. (Original) The cardiosaver system of claim 68 wherein the external alarm system is portable and is designed to transmit the data signal by means of a wireless telephone network.

80. (Original) The cardiosaver system of claim 68 wherein the external alarm system further includes means for locating the position of the human patient.

81. (Original) The cardiosaver system of claim 80 wherein the means for locating the position of the human patient is achieved by the use of the global positioning satellite system.

82. (Original) The cardiosaver system of claim 75 wherein the network operation support system is further designed to transmit the stored electrogram and the output alarm signal to a medical practitioner who is the personal physician of the human patient.

83. (Original) The cardiosaver system of claim 75 wherein the network operation support system is further designed to transmit the stored electrogram data to emergency medical services.

84. (Original) The cardiosaver system of claim 75 wherein the network operation support system includes a patient's record data base, the data base including data for a specific human patient who has a specific personal physician, the data base including a medication prescription for treatment of the human patient in the event of a heart attack, the medication prescription having been stipulated by the human patient's personal physician.

85. (Original) The cardiosaver system of claim 84 wherein the network operation support system is designed to transmit the medication prescription for treatment of the specific human patient to the emergency medical services, the medication prescription having been stipulated by a medical practitioner at the diagnostic center.

86. (Original) The cardiosaver system of claim 68 wherein the output alarm signal from the alarm transceiver is directed through an orbiting satellite to the network operation support system.

87. (Previously Withdrawn) An implanted medical device which is a combination of an implanted cardiosaver device designed to detect a cardiac event of a human patient and a pacemaker having a pacemaker lead, the pacemaker with pacemaker lead being previously implanted into a human patient, the implanted medical device including:

a "Y" adaptor for electrically connecting to the pacemaker lead and also electrically connecting to an electronics module that is part of the implanted cardiosaver device; and

an alarm within the implanted cardiosaver device for indicating to the human patient when a cardiac event has occurred.

88. (Previously Withdrawn) An implanted medical device which is a combination of an implanted cardiosaver device designed to detect a cardiac event of a human patient and a defibrillator having a defibrillator lead, the pacemaker with pacemaker lead being previously implanted into a human patient, the implanted medical device including:

a "Y" adaptor for electrically connecting to the defibrillator lead and also electrically connecting to an electronics module that is part of the implanted cardiosaver device; and

an alarm within the implanted cardiosaver device for indicating to the human patient when a cardiac event has occurred.

89. (Original) An implanted medical device to be used for the rapid treatment of a heart attack of a human patient, the medical device including the following parts:

at least one electrode placed into the heart of the human patient, the electrode being placed so that it produces an electrical signal that indicates when a heart attack is occurring;

an alarm system electrically coupled to the electrode, the alarm system being designed to inform the human patient that a heart attack is occurring when the electrical signal from the at least one electrode indicates that a heart attack is occurring; and,

a pass-through drug port implanted within the human patient, the drug port being designed to be used with a hypodermic syringe for injecting medication through the drug port and into the bloodstream of the human patient after the alarm system indicates that a heart attack is occurring.

90. (Original) The implanted medical device of claim 89, where the medication injected into the bloodstream of the human patient is designed to dissolve a blood clot in a coronary artery of the human patient.